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09/633,882	08/07/2000	MIKKEL THORUP	106989	3281

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EXAMINER	
BRUCKART, BENJAMIN R	

ART UNIT	PAPER NUMBER
2155	

DATE MAILED: 09/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/633,882	THORUP ET AL.	
	Examiner	Art Unit	
	Benjamin R Bruckart	2155	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22 and 24-27* is/are rejected.

7)☒ Claim(s) *23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Status of Claims:

Claims 1-27 are pending in this Office Action.

The 35 U.S.C. 112, second paragraph remains on claim 27.

Response to Arguments

Applicant's arguments filed 7/22/04 have been fully considered but they are not persuasive. See remarks below.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 27 recites the limitation "the diversification process" in claim 27, on page 6 of the amendment. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the

international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 21 and 22 are rejected under 35 U.S.C. 102(e) as being unpatentable over U.S. Patent No. 6,359,861 by Sue et al.

Regarding claim 21, a method for controlling traffic flow in a network having N interconnected links (Sue: col. 4, lines 1-9), where N is an integer, comprising:

selecting a control weight for each of said N links by considering an N-dimensional cost function of traffic load on each of said N links that is related to said weights (Sue: col. 4, lines 1-9), said selecting being adapted to accept a set of control weights that corresponds to a point on said multidimensional cost function that is or approaches a local minimum (Sue: col. 6, lines 51-62; col. 7, lines 16-27; cost function is in terms of weight times, the formulas calculate maximum throughput to minimize weight times; col. 2, lines 11-25; col. 3, lines 54-67); and

controlling traffic flow in the network using the set of control weights (Sue: col. 4, lines 1-9).

Regarding claim 22, where said point is selected by means of a best-neighbor algorithm (Sue: col. 12, lines 7-11).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem")(1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni").

Regarding claim 1,

The Morrison reference teaches a method for controlling traffic flow in a network (Morrison: col. 2, lines 58- col. 3, line 5; col. 5, lines 55-65; col. 7, lines 30-44; Remarks below), comprising:

generating a set of control weights relating to network traffic flow (Morrison: col. 6, lines 42-44; col. 7, lines 30-44; col. 11, line 47- col. 12, line 10) and

controlling traffic flow in the network using the set of control weights. (Morrison: col. 7, lines 30-44)

The Morrison reference does not explicitly state using the best neighbor approach.

Frigioni teaches a best-neighbor approach (Page 6, 1st Paragraph; the Dijkstra algorithm)

Frigioni further teaches that using the dynamic Dijkstra algorithm requires minimum computation by not computing the entire table from scratch at each iteration. (Frigioni, Page 1, 2nd Paragraph)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network as taught by Morrison while employing a dynamic Dijkstra algorithm as taught by Frigioni in order to minimize computation by not computing the entire table from scratch at each iteration. (Frigioni, Page 1, 2nd Paragraph)

Claim 2 is rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison and Frigioni.

Regarding claim 2, the method of claim 1, wherein the best-neighbor approach is a modified the best-neighbor approach that uses at least an anti-cycling technique. (Frigioni: Page 6, 1st Paragraph; the Dijkstra algorithm is inherently anti-cycling)

Claims 3, 6 and 9-10, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 6,192,043 by Rochberger.

Regarding claim 3,

The Morrison and Frigioni references teach a method for controlling traffic flow in a network using a best neighbor approach. The Frigioni reference teaches modifying the best neighbor approach.

The Morrison and Frigioni references do not explicitly disclose an impatient technique.

The Rochberger reference teaches a best-neighbor approach is a modified the best-neighbor approach that uses at least an impatience technique. (Rochberger: col. 6, lines 25-53)

The Rochberger reference further teaches this method reduces time in calculating routes (Rochberger: col. 6, lines 25-26)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network with a best neighbor approach as taught by Morrison and Frigioni while modifying the best neighbor approach in an impatient technique as taught by Rochberger in order to reduce time in calculating routes (Rochberger: col. 6, lines 25-26).

Claim 6 and 9 are rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison and Frigioni and Rochberger.

Regarding claim 6, the method of claim 2, wherein the best-neighbor approach is a modified the best-neighbor approach that uses at least an impatience technique. (Frigioni: Page 5, 5th Paragraph)

Regarding claim 9, the method of claim 6, wherein generating a set of control weights is further based on a piece-wise linear equation (Morrison: col. 15, lines 1-5, col. 12, lines 1-10; col. 9, 16-25).

Regarding claim 10 (currently amended), the method of claim 3, wherein generating the set of control weights includes:

evaluating a first traffic cost based an existing set of weights (Morrison: col. 9, lines 30-44; W(0); col. 6, 17-19, lines 38-45);

generating a computed set of weights based on the existing set of weights (col. 11, line 47- col. 12, line 10) and the best-neighbor approach (Page 6, 1st Paragraph; the Dijkstra algorithm);

evaluating a second traffic cost relative to the computed set of weights (Morrison: col. 7, lines 30-44); and

if the second traffic cost is lower than the first traffic cost, declaring the computed set of weights to be the existing set of weights and the second traffic cost to be the first traffic cost (Morrison: col. 9, lines 15-35; 51-54);

if a pre-selected cost criterion has not been met, returning to said step of generating (Morrison: col. 9, lines 54-60); and

if the pre-selected cost criterion has been met, setting weights to correspond to the computed set of weights (Morrison: col. 9, lines 51-54).

Regarding claim 12, the method of claim 10, wherein generating the set of second weights is further based on a dynamic graph technique. (Frigioni: Page 6, 2nd Paragraph)

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 4,506,361 by Kume et al.

Regarding claim 4,

The Morrison and Frigioni references teach a method for controlling traffic flow in a network using a best neighbor approach.

The Frigioni reference teaches modifying the best neighbor approach.

The Morrison and Frigioni references do not explicitly disclose a diversification process.

The Kume reference teaches generating the set of control weights is further based on a diversification process. (Kume: col. 6, lines 20-44)

The Kume reference further teaches the retransmission control system reduces the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network with a best neighbor approach as taught by Morrison and Frigioni while using a diversification process as taught by Kume in order to reduce the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9).

Claim 5 is rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison, Kume, and Frigioni.

Regarding claim 5, the method of claim 4, wherein the diversification process is a limited range diversification process. (Kume: col. 2, lines 3-27)

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 6,192,043 by Rochberger in further view of U.S. Patent No. 4,506,361 by Kume et al.

Regarding claim 7,

The Morrison, Frigioni and Rochberger references teach a method for controlling traffic flow in a network using a modified best neighbor approach called the impatience technique.

The Morrison, Frigioni and Rochberger references do not explicitly disclose a diversification process.

The Kume reference teaches generating the set of control weights is further based on at least a diversification process. (Kume: col. 6, lines 20-44)

The Kume reference further teaches the retransmission control system reduces the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network with a modified best neighbor approach as taught by Morrison, Frigioni and Rochberger while using a diversification process as taught by Kume in order to reduce the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9).

Claim 8 is rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison, Kume, Rochberger and Frigioni.

Regarding claim 8, the method of claim 7, wherein the diversification process is a limited range diversification process. (Kume: col. 2, lines 3-27)

Claims 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 6,192,043 by Rochberger in further view of U.S. Patent No. 5,533,016 by Cook et al.

Regarding claim 11,

The Morrison, Frigioni and Rochberger references teach a method for controlling traffic flow in a network using a modified best neighbor approach that uses an impatient technique.

The Morrison, Frigioni and Rochberger references do not explicitly teach a rarefied neighborhood search.

The Cook reference teaches, the method of claim 10, wherein generating the set of second weights is further based on at least a rarefied neighborhood search (Cook: col. 1, lines 58- col. 2, line 4; the invention sarches through a subset of the nodes).

The Cook reference further teaches limiting a predetermined constant value minimizes the processing time needed to calculate the lowest cost ring (Cook: col. 2, lines 1-4).

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network with

a modified best neighbor approach as taught by Morrison, Frigioni, and Rochberger while performing a rarefied neighborhood search as taught by Cook in order to minimize the processing time needed to calculate the lowest ring cost (Cook: col. 2, lines 1-4).

Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6)("Frigioni").

Regarding claim 13 (currently amended)

The Morrison reference teaches an apparatus for controlling traffic flow in a network (Morrison: col. 2, lines 58- col. 3, line 5; col. 5, lines 55-65; col. 7, lines 30-44), comprising:

a weight device that generates a set of control weights (Morrison: col. 6, lines 42-44; col. 7, lines 30-44), one for each link of the network (col. 11, line 47- col. 12, line 10; l=1, 2, …, L), and

at least one network node that receives one or more control weights of the set of control weights (Morrison: col. 1, lines 17-26; "nodes connected to each other"), and controls traffic flow in the network based at least the one or more control weights (Morrison: col. 2, lines 58- col. 3, line 5; col. 5, lines 55-65; col. 7, lines 30-44).

The Morrison reference does not explicitly state using a best-neighbor approach.

Frigioni teaches a best-neighbor approach (Page 6, 1st Paragraph; the Dijkstra algorithm)

Frigioni further teaches that using the dynamic Dijkstra algorithm requires minimum computation by not computing the entire table from scratch at each iteration. (Frigioni, Page 1, 2nd Paragraph)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network as taught by Morrison while employing a dynamic Dijkstra algorithm as taught by Frigioni in order to minimize computation by not computing the entire table from scratch at each iteration (Frigioni, Page 1, 2nd Paragraph).

Claims 14 is rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison and Frigioni.

Regarding claim 14, the method of claim 13, wherein best-neighbor approach is a modified best-neighbor approach that uses at least one of an anti-cycling mechanism (Frigioni: Page 6, 1st Paragraph; the Dijkstra algorithm is inherently anti-cycling) and an impatience mechanism (Frigioni: Page 5, 5th Paragraph).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 6,192,043 by Rochberger.

Regarding claim 15,

The Morrison and Frigioni references teach a method for controlling traffic flow in a network using a modified best neighbor approach that uses anti-cycling (Frigioni: Page 5, paragraphs 4 and 5; Page 6, 1st Paragraph; the Dijkstra algorithm is anti-cycling).

The Morrison and Frigioni references do not explicitly disclose an impatient technique.

The Rochberger reference teaches a best-neighbor approach is a modified the best-neighbor approach that uses at least an impatience technique. (Rochberger: col. 6, lines 25-53)

The Rochberger reference further teaches this method reduces time in calculating routes (Rochberger: col. 6, lines 25-26)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network with

a best neighbor approach as taught by Morrison and Frigioni while modifying the best neighbor approach in an impatient technique as taught by Rochberger in order to reduce time in calculating routes (Rochberger: col. 6, lines 25-26).

Claims 16, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 6,192,043 by Rochberger in further view of U.S. Patent No. 4,506,361 by Kume et al.

Regarding claim 16,

The Morrison and Frigioni references teach an apparatus for controlling traffic flow in a network using a best neighbor approach. The Frigioni reference teaches modifying the best neighbor approach.

The Morrison and Frigioni references do not explicitly disclose a diversification process.

The Kume reference teaches the apparatus of claim 13, wherein the weight device includes a diversification process. (Kume: col. 6, lines 20-44)

The Kume reference further teaches a retransmission control system, which reduces the number of packet collision, and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the apparatus of controlling traffic flow in a network with a best neighbor approach as taught by Morrison and Frigioni while using a diversification process as taught by Kume in order to reduce the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9).

Claim 17 is rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison, Kume, and Frigioni.

Regarding claim 17, the method of claim 4, wherein the diversification process is a limited range diversification process. (Kume: col. 2, lines 3-27)

Regarding claim 17, the apparatus of claim 16, wherein the diversification process is a limited range diversification process. (Morrison: col. 9, lines 46-60; where threshold amount is the limit changes are based upon)

Regarding claim 19, the apparatus of claim 16, wherein the weight device includes a cost calculator that calculates at least the cost of at least one control weight of the set of control weights based on a piece-wise linear cost function having two or more segments (Morrison: col. 15, lines 1-5, col. 12, lines 1-10; col. 9, 16-25).

Claims 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,903 by Morrison et al ("Morrison") in view of Frigioni et al ("Experimental Analysis of Dynamic Algorithms for the Single Source Shortest Paths Problem") (1998 ACM Press, Article No. 5, pages 1-3, 5-6) ("Frigioni") in further view of U.S. Patent No. 6,192,043 by Rochberger in further view of U.S. Patent No. 4,506,361 by Kume et al.

Regarding claim 18,

The Morrison, Frigioni and Rochberger references teach an apparatus for controlling traffic flow in a network using a modified best neighbor approach called the impatience technique.

The Morrison, Frigioni and Rochberger references do not explicitly disclose a diversification process.

The Kume reference teaches the apparatus of claim 15, wherein the weight device includes a diversification device that performs at least one diversification process (Kume: col. 6, lines 20-44).

The Kume reference further teaches the retransmission control system reduces the number of packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the apparatus of controlling traffic flow in a network with a modified best neighbor approach as taught by Morrison, Frigioni and Rochberger while using a diversification process as taught by Kume in order to reduce the number of

packet collision and the percentage of channel utilization is increased (Kume: col. 3, lines 6-9).

Claim 20 is rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison, Kume, Rochberger and Frigioni.

Regarding claim 20, the apparatus of claim 15, wherein the weight device includes a diversification device that performs at least one diversification process. (Morrison: col. 9, lines 46-60; where threshold amount is the limit changes are based upon)

Claims 24-26 are rejected under 35 U.S.C. 103(a) as being anticipated by U.S. Patent No. 6,359,861 by Sue et al in view of U.S. Patent No. 5,854,903 by Morrison et al.

Regarding claim 24,

The Sue reference teaches the method of claim 21.

The Sue reference does not explicitly state piecewise linear cost function.

The Morrison reference teaches the cost function is piecewise linear (Morrison: col. 15, lines 1-5, col. 12, lines 1-10; col. 9, 16-25).

The Morrison reference further teaches the invention automatically optimizes the network through both static and dynamic traffic conditions (Morrison: col. 3, lines 9-16).

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network as taught by Sue while employing an outside neighborhood heuristic as taught by Morrison in order to automatically optimize the network through both static and dynamic traffic conditions (Morrison: col. 3, lines 9-16).

Claims 25-26 are rejected under the same rationale given above. In the rejections set fourth, the examiner will address the additional limitations and point to the relevant teachings of Morrison and Sue.

Regarding claim 25, the method of claim 21 where the cost function is convex (Morrison: col. 15, lines 1-5, col. 12, lines 1-10; col. 9, 16-25; see below).

Regarding claim 26, the method of claim 21 where the second derivative of the cost function is non-negative (Morrison: col. 15, lines 1-5, col. 12, lines 1-10; col. 9, 16-25).

Allowable Subject Matter

Claims 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Remarks

The applicant argues:

With respect to claims 1, 2, 13, 14, 22, applicant argues the Morrison reference does not teach the weights are not used to control traffic flow.

In response, the examiner respectfully submits:

The Morrison reference does use the implied costs to control traffic flow. As cited previously Morrison states:

"the focus of the method of the invention in this embodiment is the sizing and routing of virtual paths within a multi-service network (specified between origin and destination) and the determination of rates of traffic offered to various routes connecting origin-destination node pairs, for the achievement of optimum network performance"

Applicant's costs have been equated to implied weights (col. 7, lines 39-44). The above-cited portion shows "sizing" and "routing" of paths within a network. Routing is defined by dictionary.com as "send or forward by a specific route." Routing is a form of

controlling traffic flow. The above quote further teaches the invention determines rates of traffic for achievement of optimum network performance.

The applicant argues:

With respect to claims 1, 2, 13, 14, 22, applicant argues the combinability of Morrison and Frigoni.

In response, the examiner respectfully submits:

The Morrison reference teaches a method for controlling traffic flow in a network, comprising: (Morrison: col. 2, lines 58- col. 3, line 5; col. 5, lines 55-65)

generating a set of control weights relating to network traffic flow (col. 6, lines 42-44; and col. 7, lines 39-44; col. 11, line 47- col. 12, line 10) and

controlling traffic flow in the network using the set of control weights (col. 7, lines 30-44; col. 11, line 47- col. 12, line 10).

The Morrison reference does not explicitly state using the best neighbor approach.

Frigioni teaches a best-neighbor approach (Page 6, 1st Paragraph; the Dijkstra algorithm)

Frigioni further teaches that using the dynamic Dijkstra algorithm requires minimum computation by not computing the entire table from scratch at each iteration. (Frigioni, Page 1, 2nd Paragraph)

Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of controlling traffic flow in a network as taught by Morrison while employing a dynamic Dijkstra algorithm as taught by Frigioni in order to minimize computation by not computing the entire table from scratch at each iteration. (Frigioni, Page 1, 2nd Paragraph)

The Morrison reference teaches "a global optimization procedure is then applied using an iterative, steepest ascent optimization procedure to yield a set of virtual path

routings and capacity allocations" (Morrison: col. 3, lines 2-5). The best neighbor approach is an equivalent substitution for this procedure.

The applicant argues:

With respect to claims 25, 26; applicant argues the examiner doesn't point or demonstrate the convex equation or the second derivative is non-negative.

In response, the examiner respectfully submits:

In response to applicant's argument, the examiner would like to explain that the understanding is that convex and the second derivative is non-negative is the same mathematically reasoning. Further convexness or the second derivative is illustrated to show the rate of change. Both limitations illustrate a positive or increasing rate of change. The Morrison reference does teach the claimed limitations when it demonstrates and states the coefficients are positive (col. 7, lines 45-58; col. 13, 18-30). The derivative of a function changes based on intervals where the third derivative equates to zero. With positive coefficients, the Morrison reference teaches a second derivative that's slope is also positive or increasing. Further Morrison teaches the function is "not concave" (col. 7, lines 12) which is the opposite of convex.

Prior Art

U.S. Patent No. 6,359,861 by Sue et al can be used to make many of the 103(a) references to 102(e) on the above claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin R Bruckart whose telephone number is (703) 305-0324. The examiner can normally be reached on 8:00-5:30PM with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (703) 308-6662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Benjamin R Bruckart
Examiner
Art Unit 2155

brb
September 21, 2004

HOSAIN ALAM
SUPERVISORY PATENT EXAMINER